

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1 1. (currently amended): A magnetic head including a spin valve sensor comprising:  
2 a magnetic shield layer (S1) being fabricated above a substrate base;  
3 a first electrical insulation layer (G1) being fabricated above said S1 layer;  
4 a spin valve sensor structure being disposed above said G1 layer;  
5 wherein said spin valve sensor structure includes a seed layer being fabricated above said  
6 G1 layer, a PtMn layer being disposed above said seed layer and at least one pinned magnetic  
7 layer and at least one free magnetic layer being disposed above said PtMn layer; and  
8 wherein said seed layer includes an Al<sub>2</sub>O<sub>3</sub> sublayer, an NiMnO sublayer, and an Si  
9 sublayer, and wherein said PtMn layer is disposed upon said Si sublayer.  
10 .

1 2. (original): A magnetic head as described in claim 1 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 3. (original): A magnetic head as described in claim 1 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å.

1 4. (original): A magnetic head as described in claim 2 wherein said PtMn layer has a  
2 thickness of approximately 120 Å.

1 5. (original): A magnetic head as described in claim 1 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å and said PtMn layer has a thickness of  
3 approximately 120 Å.

1 6. (original): A magnetic head as described in claim 5 wherein said spin valve sensor layers  
2 include at least one pinned magnetic layer having a composition including CoFe and at least one  
3 spacer layer having a composition including Cu, and at least one free magnetic layer having a  
4 composition including Co or CoFe.

1 7. (original): A magnetic head as described in claim 1 wherein said Si sublayer has an  
2 upper surface having a crystallographic surface that differs from the crystallographic surface of a  
3 deposited Si sublayer.

1 8. (currently amended): A magnetic head including a spin valve sensor comprising:  
2 a magnetic shield layer (S1) being fabricated above a substrate base;  
3 a first electrical insulation layer (G1) being fabricated above said S1 layer;  
4 a spin valve sensor structure being disposed above said G1 layer;  
5 wherein said spin valve sensor structure includes a seed layer being fabricated above said  
6 G1 layer, a PtMn layer being disposed above said seed layer and at least one pinned magnetic  
7 layer and at least one free magnetic layer being disposed above said PtMn layer; and  
8 wherein said seed layer has an upper surface comprised of Si having a crystallographic  
9 surface that differs from the upper crystallographic surface of a deposited Si seed layer, and  
10 wherein said PtMn layer is disposed upon said surface of said Si seed layer.

1 9. (original): A magnetic head as described in claim 8, wherein said seed layer includes  
2 seed sublayers including  $\text{Al}_2\text{O}_3$ ,  $\text{NiMnO}$  and  $\text{Si}$ .

1 10. (original): A magnetic head as described in claim 9 wherein said  $\text{Si}$  seed sublayer is  
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 11. (original): A magnetic head as described in claim 9 wherein said  $\text{Si}$  seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å.

1 12. (original): A magnetic head as described in claim 8 wherein said  $\text{PtMn}$  layer has a  
2 thickness of approximately 120 Å.

1 13. (original): A magnetic head as described in claim 8 wherein said  $\text{Si}$  seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å and said  $\text{PtMn}$  layer has a thickness of  
3 approximately 120 Å.

1 14. (original): A magnetic head as described in claim 13 wherein said spin valve sensor  
2 layers include at least one pinned magnetic layer having a composition including  $\text{CoFe}$  and at  
3 least one spacer layer having a composition including  $\text{Cu}$ , and at least one free magnetic layer  
4 having a composition including  $\text{Co}$  or  $\text{CoFe}$ .

1 15. (currently amended): A hard disk drive, including at least one magnetic head having a  
2 read head portion comprising:

3 a magnetic shield layer (S1) being fabricated above a substrate base;  
4 a first electrical insulation layer (G1) being fabricated above said S1 layer;  
5 a spin valve sensor structure being disposed above said G1 layer;  
6 wherein said spin valve sensor structure includes a seed layer being fabricated above said  
7 G1 layer, a PtMn layer being fabricated above said seed layer and at least one pinned magnetic  
8 layer and at least one free magnetic layer; and  
9 wherein said seed layer includes an  $\text{Al}_2\text{O}_3$  sublayer, an NiMnO sublayer and an Si  
10 sublayer, and wherein said PtMn layer is disposed upon said Si sublayer.

1 16. (original): A hard disk drive as described in claim 15 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 17. (original): A hard disk drive as described in claim 15 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å.

1 18. (original): A hard disk drive as described in claim 16 wherein said PtMn layer has a  
2 thickness of approximately 120 Å.

1 19. (original): A hard disk drive as described in claim 15 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å and said PtMn layer has a thickness of  
3 approximately 120 Å.

20. (original): A hard disk drive as described in claim 19 wherein said spin valve sensor layers include at least one pinned magnetic layer having a composition including CoFe and at least one spacer layer having a composition including Cu, and at least one free magnetic layer having a composition including Co or CoFe.

21. (original): A hard disk drive as described in claim 15 wherein said Si sublayer has an upper surface having a crystallographic surface that differs from the crystallographic surface of a deposited Si sublayer.

22. (currently amended): A hard disk drive, including at least one magnetic head having a read head portion comprising:

a magnetic shield layer (S1) being fabricated above a substrate base;

a first electrical insulation layer (G1) being fabricated above said S1 layer;

a spin valve sensor structure being disposed above said G1 layer;

wherein said spin valve sensor structure includes a seed layer being fabricated above said G1 layer, a PtMn layer being fabricated above said seed layer and at least one pinned magnetic layer and at least one free magnetic layer; and

wherein said seed layer has an upper surface comprised of Si having a crystallographic surface that differs from the crystallographic surface of a deposited Si seed layer, and wherein said PtMn layer is disposed upon said surface of said Si seed layer.

23. (original): A hard disk drive as described in claim 22, wherein said seed layer includes seed sublayers including Al<sub>2</sub>O<sub>3</sub>, NiMnO and Si.

1 24. (original): A hard disk drive as described in claim 23 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 10 to 40 Å.

1 25. (original): A hard disk drive as described in claim 23 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å.

1 26. (original): A hard disk drive as described in claim 24 wherein said PtMn layer has a  
2 thickness of approximately 120 Å.

1 27. (original): A hard disk drive as described in claim 23 wherein said Si seed sublayer is  
2 fabricated to have a thickness of approximately 20 Å and said PtMn layer has a thickness of  
3 approximately 120 Å.

1 28. (original): A hard disk drive as described in claim 27 wherein said spin valve sensor  
2 layers include at least one pinned magnetic layer having a composition including CoFe and at  
3 least one spacer layer having a composition including Cu, and at least one free magnetic layer  
4 having a composition including Co or CoFe.

1 29. (withdrawn): A method for fabricating a magnetic head including a spin valve sensor,  
2 comprising the steps of:  
3 fabricating a first electrical insulation layer (G1) above a first magnetic shield layer (S1);

4 fabricating a plurality of spin valve sensor layers above said G1 layer, said spin valve  
5 sensor layers including a seed layer, a PtMn antiferromagnetic layer, at least one pinned  
6 magnetic layer and at least one free magnetic layer;  
7 wherein said seed layer includes seed sublayers including  $\text{Al}_2\text{O}_3$ , NiMnO and Si.

1 30. (withdrawn): A method for fabricating a magnetic head as described in claim 29 wherein  
2 said Si seed sublayer is fabricated to have a thickness of approximately 10 to 40 Å.

1 31. (withdrawn): A method for fabricating a magnetic head as described in claim 29 wherein  
2 said Si seed sublayer is fabricated to have a thickness of approximately 20 Å.

1 32. (withdrawn): A method for fabricating a magnetic head as described in claim 30 wherein  
2 said PtMn layer has a thickness of approximately 120 Å.

1 33. (withdrawn): A method for fabricating a magnetic head as described in claim 29 wherein  
2 said Si seed sublayer is fabricated to have a thickness of approximately 20 Å and said PtMn layer  
3 has a thickness of approximately 120 Å.

1 34. (withdrawn): A method for fabricating a magnetic head as described in claim 33 wherein  
2 said spin valve sensor layers include at least one pinned magnetic layer having a composition  
3 including CoFe and at least one spacer layer having a composition including Cu, and at least one  
4 free magnetic layer having a composition including Co or CoFe.

1 35. (withdrawn): A method for fabricating a magnetic head as described in claim 29  
2 including the further step of etching a surface of said Si sublayer prior to the deposition of said  
3 PtMn layer thereon.

1 36. (withdrawn): A method for fabricating a magnetic head including a spin valve sensor,  
2 comprising the steps of:

3 fabricating a first electrical insulation layer (G1) above a first magnetic shield layer (S1);  
4 fabricating a plurality of spin valve sensor layers above said G1 layer, said spin valve  
5 sensor layers including a seed layer, a PtMn antiferromagnetic layer, at least one pinned  
6 magnetic layer and at least one free magnetic layer;

7 wherein said seed layer is comprised of  $\text{Al}_2\text{O}_3$ , NiMnO, Si sublayers, and wherein said Si  
8 sublayer is fabricated by depositing it to a first thickness and subsequently etching it back to a  
9 final thickness before the fabrication of said PtMn layer.

1 37. (withdrawn): A method for fabricating a magnetic head as described in claim 36 wherein  
2 said Si sublayer is fabricated to have a final thickness of from approximately 10 Å to  
3 approximately 40 Å.

1 38. (withdrawn): A method for fabricating a magnetic head as described in claim 37 wherein  
2 said Si sublayer is fabricated to have a final thickness of approximately 20 Å.



1 39. (withdrawn): A method for fabricating a magnetic head as described in claim 37 wherein  
2 said Si seed sublayer is fabricated to have a thickness of approximately 20 Å and said PtMn layer  
3 has a thickness of approximately 120 Å.

1 40. (withdrawn): A method for fabricating a magnetic head as described in claim 39 wherein  
2 said spin valve sensor layers include at least one pinned magnetic layer having a composition  
3 including CoFe and at least one spacer layer having a composition including Cu, and at least one  
4 free magnetic layer having a composition including Co or CoFe.